APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,799	07/31/2003	Brian Todd Kelley	CM03579J/10-159	1998

			EXAMINER

7590   07/21/2006

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ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 07/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/631,799	KELLEY, BRIAN TODD
	Examiner	Art Unit	
	Duc M. Nguyen	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 May 2006*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 7-05)   Office Action Summary   Part of Paper No./Mail Date 20060717

DETAILED ACTION

This action is in response to applicant's response filed on 5/23/06. Claims 1-32 are now pending in the present application. **This action is made final.**

Response to Arguments

1.   Applicant's arguments filed 5/23/06 have been fully considered but they are not persuasive.

As to claims 1, 13, 21, 26, Applicant contends in the Remark section, page 11 that

"The scheme in Liu et al. for obtaining filter coefficients is one version of known approaches to **iteratively** estimating the coefficients, rather than **explicitly, definitely** and **directly** calculating, determining or computing such coefficients. The Examiner cites equation (7) of Liu et al as suggesting the claimed coefficient generator or coefficient determination process. Applicant respectfully disagrees and notes that Equation (7) is an example of an equation that is easy to write but heretofore not one that had a **close form** solution that was practical to implement, i.e., one where coefficients could be directly and deterministically derived in a practical manner."

In response, the examiner asserts that

a) it is not clear what Applicant means by **explicitly, definitely** and **directly** calculating the coefficients. Further, the term "directly" is never recited in claims 1, 21, 26;

b) equation (12) or (13) on page 1040 of Liu's reference clearly disclose a "closed form" solution for the filter coefficients.

c) claims 6, 8, 16-19 clearly recite approaches to **iteratively** estimating the inverse matrix, which is the necessary element used in order to compute the coefficients. Therefore, it is not clear how the claimed coefficients would differs or distinguish from Liu's computed coefficients, noting that although the claims are interpreted in light of the specification, <u>limitations from the specification are not read into the claims</u>. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, the features upon which applicant relies (i.e., a different closed form solution ?? for filter coefficients) are not recited in the rejected claim(s)

For foregoing reasons, the examiner believes that the pending claims, which relies on the patentability of the "**explicitly, definitely** and **directly** calculating the coefficients" limitation, are not allowable over the cited prior art. Accordingly, the rejection is repeated below.

Claim Rejections - 35 USC э 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims **1-6, 9, 12-16, 18, 20-22, 25-28, 31-32** are rejected under 35 U.S.C.

103(a) as being unpatentable by **Liu** et al (IEEE, "A decorrelating RAKE receiver for

CDMA Communication over Frequency-selective Fading Channel", Vol. 47, No. 7, July

1999).

Regarding claim **1**, **Liu** discloses a decorrelating RAKE receiver (see section III,

pages 1038 – 1040), comprising

- a plurality of filters comprising a plurality of filter coefficients (see Fig. 1 regarding

  W_1 to W_L blocks, wherein each "block" would read on a "filter" as claimed);

- a coefficient generator (see equation (7) on page 1039, wherein it is clear that a

  coefficient generator would obviously be required in order to generate W_j

  coefficient vectors);

- a combiner (see Fig. 1 regarding the coherent combiner).

Therefore, the claimed limitation regarding a coefficient generator is made obvious

by Liu.

Regarding claim **2**, the claim is rejected for the same reason as set forth in claim

1 above, wherein it is clear that Liu would disclose an autocorrelator processor as

claimed (see equation (7) on page 1039, and equation (9) on page 1040, note for the

autocorrelation function yy and autocovariance matrix Ryy).

Regarding claim **3**, the claim is rejected for the same reason as set forth in claim

1 above. In addition, based on the specification regarding the "receiver or user

identification information" Ci description and equation (1) on page 14, and by

comparing the eq. (1) in the specification with the eq. (7) in Liu, it is clear that the "a

priori information" C_i in Liu would obviously correspond the "receiver identification information" as claimed (i.e, they both subject to the constraint C.h or C.W = identity matrix I).

Regarding claim **4**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, Liu would disclose an inversion processor as claimed (see equations (12) and (13) on page 1040).

Regarding claim **5**, Liu would disclose a "receiver identification information" for the same reason as set forth in claim 3 above.

Regarding claim **6**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, Liu teaches a recursive architecture to obtain the filter coefficients W_i (see equation [11] on page 1040).

Regarding claim **9**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, it would have been obvious to one skilled in the art at the time the invention was made to use a pipeline architecture in Liu, for speeding up the computation of the filter coefficients W_i.

Regarding claim **12**, the claim is rejected for the same reason as set forth in claim 1 above, wherein it is clear that Liu would disclose a wireless device as claimed.

Regarding claims **13-16, 18, 20**, the claims are directed to a method and could be interpreted and rejected for the same reason as set forth in claims **1-6, 9, 12** above.

Regarding claims **21-22, 25**, the claims are directed to a signal processor and could be interpreted and rejected for the same reason as set forth in claims **1-6, 9, 12** above.

Regarding claims **26-28, 31-32,** the claims are directed to a CDMA spread spectrum system, and could be interpreted and rejected for the same reason as set forth in claims **1-6, 9, 12** above.

4.   Claims **7-8, 10-11** are rejected under 35 U.S.C. 103(a) as being unpatentable by **Liu** in view of **Wang** et al (IEEE, "Adaptive joint multiuser detection and channel estimation in multipath fading CDMA channels", Wireless Networks 4, 1998, pages 453-470).

Regarding claims **7-8, 10-11, Liu** would discloses all the claimed limitations, see claims 1-6 above, except for a Levinson Durbin algorithm is used to obtain the matrix inverse of the autocorrelation matrix Ryy. However, it is noted that since the use of Levinson Durbin algorithm for solving matrix inverse is well known in literature as disclosed by **Wang** (see section 6.4 on pages 463-465), it would have been obvious to one skilled in the art at the time the invention was made to incorporate Wang's teaching to Liu for utilizing the Levinson Durbin algorithm in Liu as well, thereby providing predictive calculator as claimed, for utilizing advantages of Levinson Durbin algorithm such as less complexity and operations, and require only O(N) memory locations.

Regarding claims **17, 19, 23-24, 29-30**, the claims are interpreted and rejected for the same reason as set forth in claims **7-8, 10-11** above,

Conclusion

5.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

6.   **Any response to this final action should be mailed to:**

Box A.F.

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(571) 273-8300 (for **formal** communications intended for entry)

(571)-273-7893 (for informal or **draft** communications).

Hand-delivered responses should be brought to Customer Service Window,

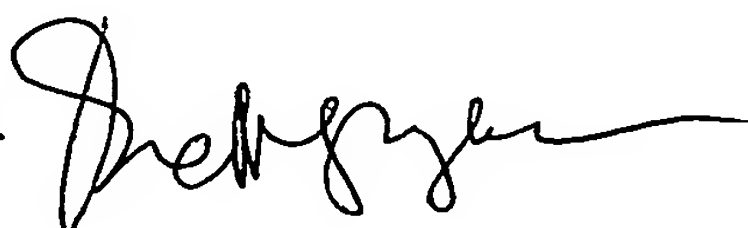Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

Any inquiry concerning this communication or communications from the examiner should be directed to Duc M. Nguyen whose telephone number is (571) 272-7893, Monday-Thursday (9:00 AM - 5:00 PM).

Or to Matthew Anderson (Supervisor) whose telephone number is (571) 272-4177.

Duc M. Nguyen, Pri. Examiner.

July 18, 2006